

*CLAIM AMENDMENTS*

1. (Original) A method of monitoring analyte flowing in fluid streams comprising the steps of:

providing a giant magnetoresistive sensor having at least one sensing element which produces electrical output signals that vary dependent on changes in the magnetic field proximate the sensing element;

providing a stream including the analyte, the stream having a magnetic property dependent on the concentration and distribution of analyte therein;

flowing the stream past the giant magnetoresistive sensor in sufficiently close proximity to cause the magnetic properties of the stream to produce electrical output signals from the giant magnetoresistive sensor; and

monitoring the electrical signals produced by the giant magnetoresistive sensor as an indicator of at least one of an analyte concentration, an analyte distribution, and an analyte magnetic property in the stream flowing past the giant magnetoresistive sensor.

2. (Original) The method of claim 1 in which the step of providing a stream including the analyte comprises magnetically labeling the analyte for direct detection thereof.

3. (Original) The method of claim 2 wherein the step of providing a stream including the analyte comprises injecting the analyte into the stream.

4. (Original) The method as set forth in claim 1 wherein the step of providing a stream including the analyte comprises providing a background stream of magnetic particles flowing past the giant magnetoresistive sensor and adding unlabeled analyte to the stream whereby the GMR output represents an indirect measure of the presence of the analyte.

5. (Original) A detecting system for monitoring the concentration of analyte present in a flowing fluid stream, the detecting system comprising in combination:

a giant magnetoresistive sensor having at least one sensing element for detecting localized changes in the magnetic field proximate the sensing element;

microfluidic channels associated with the giant magnetoresistive sensor for providing microfluidic channels closely proximate the sensor element, the proximity being such that magnetic particles flowing in the channels will cause an output from the giant magnetoresistive sensor indicative of at least one of the concentration, distribution, and magnetic properties of magnetic particles;

a source of analyte in a fluid stream altered such that the fluid stream has a magnetic property related to the concentration or distribution of analyte in the stream, the source being connected to the microfluidic channels for flowing a stream including the analyte past the giant magnetoresistive sensor; and

an electrical monitor responsive to the giant magnetoresistive sensor for measuring and recording changes in the output signal as an indication of the magnetic properties and therefore analyte concentration or distribution in the stream flowing past the giant magnetoresistive sensor.

6. (Original) The detecting system of claim 5 further comprising a magnetic field generator for controllably creating a magnetic field proximate to the at least one sensing element.

7. (Original) The detecting system of claim 5 wherein the giant magnetoresistive sensor comprises an array of sensing elements arranged in series.

8. (Original) The detecting system of claim 5 wherein the giant magnetoresistive sensor comprises an array of sensing elements arranged in parallel.

9-29. (Canceled)